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Remarks as Delivered

Hi, everyone. You know, I think of all the conferences that I go to, and I go to a lot. More than I'd probably care to go to. This is the one I really look forward to. And the last couple years, I've come to these to try to deliver something that was different from all the other conferences. And I think the reason I want to do that is because this really does represent sort of a confluence of all of our industry that comes together, particularly in the air traffic control industry.

And it's the time of year for us. It's just after we sort of close out our fiscal year at the FAA on September 30 and we see some early results of what we've achieved.

The other part about coming to ATCA is I've seen so many friends and colleagues that, for the most part, have occupied most of my professional career and it's a chance to commiserate about what our problems are and talk about what the solutions might be.

In fact, some of us have switched sides over the years. I mean, here I am at the FAA, at the organization that I used to complain about incessantly, just four or five years ago. And I see some of the people that used to work for me out there, complaining to me now about what I'm doing.

Now, what's interesting is transportation's a big business, of course. And one of the people that certainly I've respected over the years that recently left Boeing

commercial airplanes, namely Allen Mullally, left aviation for the automobile industry.

Now, what a challenge. It's a growing but a rapidly changing and evolving industry that Allen's going to try to help reinvent a company that really started the automobile industry for America. In fact, you may not know that today, November 1st, almost 80 years ago, in 1927, Ford actually started production on their model "A."

Now, the interesting part is the model "A" represented the beginning of a new era because the model "T" had dominated for the previous 20 years. And even though Henry Ford tinkered with it and modified it here and there, it pretty much stayed the model "T."

But again, a growing and changing marketplace changed the environment. He realized that with Chevrolet and Plymouth coming up on as competitors, he was losing market share. And so he introduced the model "A," the beginning of a new era in the performance of a car. Style, comfort, color. Can you imagine that?

Ford had to reinvent itself in 1927, and guess what? Allen Mullally is over there to try to help them reinvent themselves again. And over the years they've reinvented themselves several times. Now, we, in the aviation industry are facing, just like Ford, a reinvention. We've talked about this for years. We had a little reprieve after 9/11, but the reality is we are facing a reinvention, and we're having trouble getting there. A lot of smart people in this room that I know are smart, some a lot smarter than I am, but what is it going to take for all of us to get together on this?

Now, arguably, this has been the toughest last five years in aviation. And yet I look around the room, and again, I see so many familiar faces, friends and colleagues. So why are we all here?

Well, I'm here for the money. Actually, we're all here for the money. I'm not talking about our paycheck. I'm talking about the economic activity that is driven by aviation, conservatively $190 billion dollars a year. $190 billion, 1 million jobs, some of them are in this room. But look at the amount of activity associated with it, $18 billion in airports. The biggest one there, air carriers at $91 billion. Manufacturing at $49 billion, a lot of those people in this room, right?

Conservatively, though, you know the reason we're here is, you know, it's really what it does for the entire economy of the United States. $640 billion conservatively, about 5.4% of the GDP. 9 million jobs. Look how much tourism and earnings associated with it. So we are here for the money.

But it's not the money that compels us. It's the contribution to the standard of living for everyone who lives in this country. And that's why we're here, because what's so important is we see that as a future as well. We have to figure out how we're going to do this to keep this going. So that our children have the same future that we enjoyed over the last 30 years.

Now, I'm going to take you back to ATCA 2004 when I first came up here and showed you the first business plan.
I said, guess what we're going to do? We're going to take these three organizations and we're going to turn them into a whole bunch. I remember people said, “how are you ever going to get them work together?”

When you come from the private sector, you realize quickly that working together is not a characteristic of the organizational structure, the characteristic of the behavior of the people in it. So we set about to do not only aligning all of our business to output, which at the time there was one more of flight services there, but the big ones now the Line operating business en route and oceanic, Terminals and System Operations and Technical Operations.

It's not so much that you have 11 layers of management. It's what happens when you do that. This has been a huge change for us.

We've reduced our overhead staffing, nonsafety staffing, by 1600 people. That's about 16% of our overhead staff, nonsafety staff. Reduced the number of executives in the ATO by over 20%. And that's a good thing if you can say your business is even better. We've reduced the number of high-level management positions by 20%. And we've achieved, by doing that, actually an improvement in direct employee productivity by about 3%.

That's all great because what is it that we do when we take the money and have it have gone to overhead, we put it into the operation. But when you do that, you've got to tell the operation what they're going to do. And so after 2005 was about, okay, what are our challenges, and what is our business model?

It's about results. But, of course, it's the way you produce results is process. And you have to actually give everyone the guidance so they actually spend the money in the right way. And produce those results.

Those processes are built into a scorecard, and I went through all this over the last year.

But the main thing when you look at this, though, that for the organization, is it represents the picture, all of puzzle pieces that make up every dollar and every resource and every person in that organization. And they have to be focused on some fairly simple things.

Operating excellence is nothing more than we talk about output. We're a safety service. I produce a level of safety. I produce a level of efficiency for my customers. And an expectation for the owners. So you have to measure what it costs. Basically this is nothing more than “value.” You do this every day. Certain amount of output, cost a certain amount, you get value. Now, what do you do

when you increase value every year? What are you really doing to a marketplace? Your stimulating it. Producing more value as marketplace grows. When we talk about the third pathway, capacity, what we're really talking about is growth. Economic growth. We're here for the money, economic growth. Makes sense, right?

But how would you continually produce value and growth? How would you sustain that year after year after year? Well, that's what Ford is looking at right now, right? You do it through reinvention. Now, as an industry, we tend to think of this as satellites. New technology. But before you can make the right use of the technology, you have to reinvent something else. You have to reinvent us.

Now, as long as we are standing on each other's side of a fence throwing rocks at each other, we're not getting a lot of reinvention going on. I'll talk about the rocks inside the FAA, then I'll talk about the rocks outside the FAA. In any case, we've made a lot of progress here in this reinvention because what we're really after, you put an ever-sustaining, increasing value with growth and reinvention, and you do get economic growth.

Now, if you do all this and you put metrics to it, you can produce measurable results. Now, when we started the ATO in 2004, about halfway through 2004 actually, we did the restructuring, we didn't do so hot. 4 out of the 7 high-level goals we just missed. Safety, capacity are the ones that rise up to the top. As a measure of our output. And by 2005, the scorecard got rolled out, the metrics got better understood, and we, in fact, measured and increased how hard it was to get there, and we still made 6 out of 7.

And we have our final results for 2006 now. And I'm happy to report that even though we added one, which was to hire enough controllers, we hit them all. And this is the first time we hit our safety goal. Now, that took a huge amount of effort for us.

In fact, if you drilled down on that a little bit and you look at the en route goals where these errors are detected through automation, so that's a good baseline, can you see that we've done a good job over the last several years. The problem, of course, being that these are errors. That's one of the few input goals we have. You really can never go less than zero. In fact, how many human beings do you know of, no matter how good a controller he or she is, can reach zero?

You can't. And our controllers are doing an unbelievable job. That is six errors in the en route per million opportunities. That's like dialing 50 phone numbers a day, every day of your working career for 20 years and making one mistake. That's an incredible record of performance by our controllers.

Now, if you think about that, you say, okay, how are we going to produce more value, then?

Maybe we're stuck. Maybe we're at the end of what we can do. So we start looking at new things. ADS-B, lots of attention. Wow, you look at radar to radar separation error. Talking about errors. And you look at ADS-B radar, and you go, wow, we could do a little better. And you do ADS-B to ADS-B, and you're doing a lot better. Now, this is a technology still unapplied, but there's some promise there. If we use this in the right way, maybe it will have value for improving one of our basic output metrics, safety.

The other part of it is this capacity issue. The demand for growth, even though we've had a little dip since 9/11 for a couple years, appears to be on the rise. Now, we expect it to rise and continue that way. Now, you may think, well, how can you extrapolate from that, given where you've been in the last five years?

Well, the reality is, you look at it all the way back since the beginning of commercial aviation. It's not a farfetched demand projection in terms of passenger and it's just a continuation of what aviation has done for this economy.

Now, one of the more important parts about when you look ahead at what you want to do here, is that not all the capacity and demands equal all over the country. In fact, this is sort of a graphic pictorial, a pretty picture of what it really looks like. And if you look at it, we have some pretty congested airspace already in key areas of the marketplace.

Moreover, it's gotten a lot more crowded in between them. With a lot of en route problems. So back at ATCA 2005, we talked about that. We said “we modeled it for the first time. What did we find out?”

We found out by the middle part of the next decade, we have a problem. We have an en route airspace problem. And it's mainly in the spring, summer months here in the United States. And you think about that. So the last two ATCA’s, we talked about reorganization, and I talked about the fact that we hit goals, and we can actually execute a vision. But now we need a vision for how we're going to address these problems.

That's a lot of delay, by the way. We estimate the projected delays will cost the airline industry about $2 billion above what they currently pay and basically in delay costs. And that's just seven years from now. Seven years is not very long in our industry. So what do we do?

Well, I'm going to use the word "productivity," and it's not really used in the same way that it's been used in the past. Productivity, in a business term is sort of used as a way of seeing how efficient people are utilized. I need to use that a little bit differently. What I'd like to do is talk about how we produce more airspace. Or more capacity.

So in the past, if you took the entire NAS and just notionally, said how much capacity do you need and you have more, generally you're really constrained by the human beings working it because the human beings can only handle so many. So when you want to handle more capacity, you resectorize. You split up

the airspace. So there's fewer airplanes for each person in a system to work, in this case controller. And, of course, we keep filling it up until the work load gets to where we can't handle it anymore. And what do we do?

We do it again. Until the work load gets so high that we can't handle it anymore, and we do it again. Now, each time we do it, you notice we don't get quite as much capacity as we got the last time, because we don't have any more airplanes, what we're doing per se, is we're actually splitting it up and adding a lot of overhead so there's a lot more frequency changes and interfaces that go along that the controller has to spend his or her time doing. So you don't get all the capacity you'd like to have. So we're just about getting there.

We have places in the country now that are at their limit, and some that are approaching it. It's not even, of course. But it is in very specific places. And we're never going to reach two to three x by 2025 this way because we can't scale that anymore. When you reach the limit, you can't just shove more airplanes down a human being's throat and say, “just handle it.” You've got to do something.

So we did. We had to answer some pretty basic questions. If we model that, we take what we did here, is we ran an experiment with MITRE. The first thing we had to do was build some simulations in the en route area — we did it in the terminal area as well. And we brought in 12 first-line supervisors who were currently certified. And we brought them in, and we said, okay. We're going to put — these are from different areas of the country except for Washington Center and Indianapolis Center. And then we took the high-performance sectors in Washington Center and Indianapolis Center and we trained them on it. And we had them measure workload on the right. They'd push a button every few minutes. And on the left-hand side we started cranking the traffic up. And we cranked it up to about the middle of the next decade. And we said, well, how will our people do?

You can see it starts off. We grew the traffic at what we considered a reasonable market rate. And as you reached in the simulation, you start to reach not quite to 2015/2016 levels, and they can't handle it anymore because the work load goes so high. In fact, the tailing off, even though the scenario's ending, the actual handling of the airplanes is pretty much “grab it and get rid of it” in some cases. Because you just can't handle the airplanes.

Now, why is that important for us to know? Well, first of all, it tells us a little about scaling the system but it also gives us very key insights into what we could do differently to get a different result. Because what I'm after is productivity that improves safety, not just grab more airplanes. Because I'm looking for more capacity. But in the end, it really comes down to productivity.

Enter something we call Performance-Based ATM. It’s taken the better part of two years for us to put together the simulations, get the people together, and actually run the scenario. So we took those people that we had handling the traffic in that first scenario, and we said, okay, what if we gave you automated tools that did certain things? What would you need and what do we have that we know we could actually build that could help you work that traffic?

This is a really interesting experiment because — and it is an experiment, okay. This is not development. We are in the process of researching this. And I'm going to show you the first results from that.

The premise is this, it's not unlike any industry. It doesn't have to be aviation. Telecommunications went through it.

Where you had a manual human-driven process where you actually had to not only use voice for everything, but you had to recognize impending problems. The human being had to do that. The human being actually had to resolve the problems. The human being had to handle all the overhead that goes with it.

More importantly, there were separate systems, telephones and headsets and intercoms and things that you had to work.

Now, had we done that, in 1878, when you look at that kind of picture, telephone service was started, the first switchboard only had 21 telephones and eight lines. And they couldn't scale either. You couldn't have the number of phones we have today or any cellular network. You had to have that kind of telecommunications system. In fact, automation was brought in, data communications, automatic switching, automatic scan and detection of problems which is resolved by the telephone switching systems, basically a lot of automation. That helps those who are monitoring and handling the system to do it.

Now, one key area is not just automation. The most important word on that slide is the bottom right — integrated systems. Integrated. You have to actually integrate from end to end what's going on. Otherwise you don't get more capacity. What you get is more work. Of course, what we're after is less work.

So here's what it looks like. If we take that same scenario and we give them some automated tools, the work load drops dramatically. In fact, even when we throw in lost comm and airplanes wandering off, it only gets to a two or three at the worst case. So this begs the question, “well, that's great, what happens if you just start to increase the sector size and get them more airplanes, i.e., more productivity, but also more airplanes?

And the results were astonishing. And they could handle a lot more airplanes. Now, here's the thing about this. This is not a system where the backup is, okay, the system just failed. Here you go, take it over, because the controller no longer has the picture. You can't do that. But it did require something all new, an integrated display or an action list could be brought up through automatic scanning what the impending strategic and tactical problems were for that controller. And they were able to handle all those airplanes with that workload.

Now, as I say, this is early results. Not just en route, but we also did terminal. And we got the same results. Now, what that says is we have a glimpse in what we might need to handle traffic in 2016.

Now, what would it take to get there? Well, we know NextGen capabilities. JPDO's outlined a number of things that we need to get to. And we have a number of programs. This is about the only place hopefully you'll see too many acronyms that nobody understands. If you do, they're on the left there. That's the way we describe ourselves today. But we have a gap, by the middle of the next decade, I will not be able to handle the traffic at that level, which is about 25% more than I've got now.

How do we address the gap? You would have to build an integrated set of tools that we put in that simulation, like all the different screens have to be integrated into one in front of a human being. Like an action list that actually manages control events that are scanned automatically. Like reducing all the handoff and routine overhead things that we make controllers do because we have no reliable way that they can depend upon to do it automatically. Like automation of systems with traffic flow management down to the airplane level, so that an airplane is told to slow down way back before they even become a problem in the sector that is currently handling that airplane or will be handling that airplane. And pilot requests.

Plus data communications. Now, those of who you know me know that I have a passion for data communications. But we always struggle, what are we going to use it for? Hallelujah.

I know what I have to use it for and not only that, I know how it has to work and what its requirements may need to be, which we've never really knew before.

But we've got a lot of work to do. What about massive weather systems that come rolling through? How do we handle that? And like I said, what do we do about the backup?

If you single thread this, you can only get the controller enough — the number of airplanes he or she could work if it all failed. Now, every morning we have a 7:30 conference. And we go over all the delays, and we go over all the failures of the national airspace system, and we go over all the security events and et cetera, et cetera. And there's always some part of the NAS that's failing. So it's not that you're ever going to build one system that can do it all. But you will need redundant systems so the controller never has to worry, about losing the automation.

That is something we have to learn to build because we have not built that yet.

But if we do that, there is a potential solution that is actually visible on the horizon. So the question is how are we going to get there? How can we actually achieve this?

Now, we call it OEP, we changed the words. It almost doesn't matter what the words are. What really matters is how will this work? Because in the past, we've built the OEP on what we knew. Now we want to build it on the NextGen system. And except for the con ops and what we've done in modeling in JPDO, we don't really know what that looks like, right. It’s just words and documents. We have the legacy accounting — accountability organizations inside the FAA.

We've included now operation certification airports, terminal system operations, en route and the ATO. And we added JPDO which is the infusion of new ideas that ultimately have to be evaluated in terms of safety, policy and certification. Now, if you can get through that and that new idea actually makes sense, then you might do some technical development.

But what's really different about the new model is we're talking about integrated services. Services that isn't “one program equals one new service.” One new service may require pieces of many programs. Which means a single program manager is not responsible for producing that service.

Now, one of the achievements that we've really been very proud of in this year particularly is the fact that we started tracking our performance, on programs. Our 29 or 30, depending on the year, critical acquisition programs, in terms of cost and schedule. And we held ourselves to a pretty high standard. And I'm very proud to report, in 2006, we hit 97%. We only had one critical program where we fell behind.

Now, when you talk about integrated services that require many programs, how many programs can fall behind and still succeed? Not many, right? Like zero.

Now, if we're going to produce those, we have some very, very important work that needs to be done by this community. We have to understand the concept. It has to be mature enough to develop criteria so we understand what it takes to get into implementation.

Now, believe it or not, the OEP has done this. The OEP has been very successful at multiple programs. The best example is our runways. RNP maybe secondarily. But we have taken multiple programs on multiple asynchronous schedules and produced service when that runway opened. When we think about 2025 and what we may be looking at, we always look for an implementation date somewhere and the JPDO is supposed to help us determine what year that is. That tells us whether we need rule-making or when that investment analyses has to be done, when the certification has to be done, working backwards, when we need final performance standards driven by the prototype.

The trouble is when you talk about integrative services, that's one program. We need to do concept demonstrations that are integrated so we understand all the

requirements of all the various systems that need to come together to produce this.

Kind of like super runway program, if you were to look at OEP. Now, there are many organizations that do this. Some people call it large-scale integration. This is not rocket science. It's not easy. But it's not rocket science.

In fact, I don't know, when I was a kid, somebody actually produced a toy that could teach people how to do integration of six programs with nine different critical elements. Did you know that? You might have even played with the toy. The reason it's so important for us now is the problem we have isn't really 2025. The problem is 2016 to get to the first step.

Let's talk about that toy. How many of you actually solved this thing? Nobody raised their hand. Okay, you're not on the integration team, you're not on the integration team. All right. This toy represents the challenge of an integrated, multi-program, multidimensional implementation. Now, in the past what we did is we took a program, our highest value, biggest programs, and we really concentrated on it, right? We turned it, and we turned ourselves inside out, we lined up the budget and we made sure that program made it.

In what terms? COST, SCHEDULE and PERFORMANCE, good program management, right? But in the multidimensional, multi-program service, we've got to worry about more than one program. We've got to line them all up.

Now, this represents three programs that are critical to producing that service that we saw in that concept demonstration. What do we need — we need data communications which don't have anything right now, right? Except what we did with CPDLC. URET which we just finished putting in all 20 centers, that means to be upgraded with something with new requirements. E-RAM we're on track, were doing a great job, but we'll need to expand that to get what we saw in that demonstration. And we've got to quit thinking of these in terms of programs

anyway. What we're really after is not like ADS-B, it's what we do with that technology. So it really looks like this. We need integrative displays.

We need conflict automation that works for the human and the center, i.e., the controller, and we've got to reduce overhead tasks, that means automation that does that kind of thing. And one more step, we've got to do that while we execute our business plan, which we're getting better and better at doing. That means I have to address things like aging facilities. Business continuity, backup, and, of course, lubrication for the whole thing, net-centric operation. What is the beginning or what is the end point of our beginning program that we call SWIM, or the system-wide information network.

Now, here's the deal for the whole community. All right? We know this. We actually, as you saw in that demonstration, we can see this. The question for us, as a community, is in 2016, that little girl on that slide will be coming home from college on Thanksgiving. The middle part of the next decade.

Will that girl be picked up at the airport to enjoy a nice Thanksgiving dinner, or will she be stranded 1,000 miles away, missing a connection with all the remaining flights being full sleeping in a terminal? Because if we allow 2016 to come without taking part in developing, expanding, and improving on that concept demonstration, that's where we'll be.

And we've done the first step: an integrated concept demonstration, like the one that you saw here. Just to give us a glimpse of the future.

But I know everyone in this room. If we can envision it, then we can simulate it. We can test it. We can modify it. We can refine it.

If we can do all of that, then together we can build it.

So thanks. And I hope you had a good ATCA, and I'll see you again next year.